Ultrahigh Resolution 3-Dimensional Imaging, Phase I

Completed Technology Project (2005 - 2005)

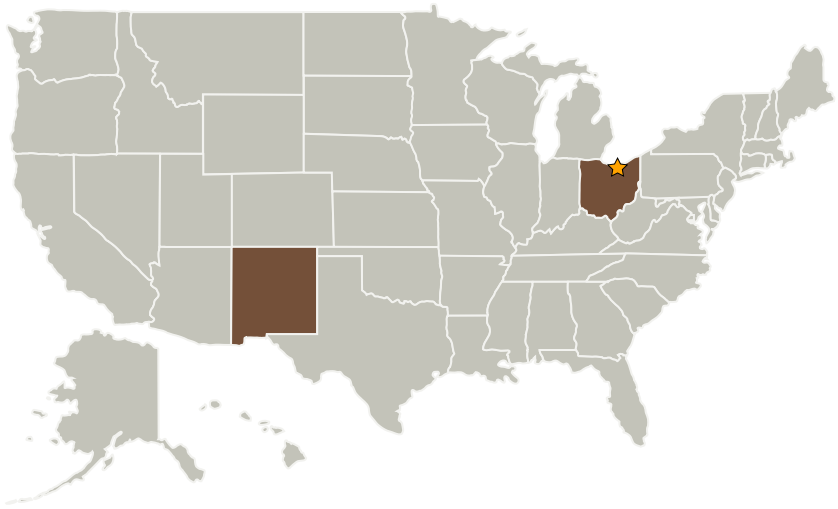
Project Introduction

Southwest Sciences proposes to develop innovative instrumentation for the rapid, 3-dimensional imaging of biological tissues with cellular resolution. Our approach is a variant of optical coherence tomography that will use a very small, low power and compact white light source to provide 2 micrometer or better image resolution. This device will enable NASA researchers to non-invasively study the structure of living, functioning tissues and cells. The instrumentation is based on a compact, low cost, low power white light source and can be designed for operation in spaced-based laboratories.

Anticipated Benefits

A rapid, high resolution 3-dimensional optical imaging method will have important commercial applications in clinical and biomedical research including detection of cancerous and precancerous tissues, imaging of venous and arterial structures, optical biopsy and microsurgery guidance. This technology can be incorporated into endoscopes, catheters and similar devices for in vivo applications.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Southwest Sciences, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

Primary U.S. Work Locations	
New Mexico	Ohio

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Project Manager:
David G Fischer

Principal Investigator:
Kristen Peterson

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes